REMARKS

Claims 1-18 are pending in the present application. Claims 1 and 16 are amended above. No new matter is added by the claim amendments. Entry is respectfully requested.

The Applicant appreciates Examiner Blum's participation in a telephone interview with Applicant's attorney on March 22, 2006. The present Amendment, filed in conjunction with a Request for Continued Examination, is believed to address the issues raised during the interview so as to place the application in condition for allowance. Such allowance is respectfully requested.

Claims 1-12 and 14-18 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Chung, *et al.* (U.S. Patent Number 6,884,675) in view of Basceri, *et al.* (US Patent Number 6,673,669). Claim 13 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Chung, *et al.* in view of Basceri, *et al.* and further in view of Narwankar, *et al.* (US Patent Number 6,677,254). Reconsideration of the rejection and allowance of the claims are respectfully requested.

In the present invention as claimed in independent claim 1, a method of manufacturing a capacitor of a semiconductor device includes depositing a first dielectric layer on a first electrode, curing the first dielectric layer, depositing a second dielectric layer on the cured first dielectric layer using only a source gas without a reactant gas. Depositing the second dielectric layer includes the steps of introducing the semiconductor substrate into a deposition chamber, supplying a source gas to the deposition chamber and heating the semiconductor substrate such that a stable dielectric layer is deposited (see the specification, for example at page 8, lines 7-29). After depositing the second dielectric layer, a second electrode is formed on the second dielectric layer without curing the second dielectric layer.

In the present invention as claimed in independent claim 16, a method of manufacturing a capacitor of a semiconductor device includes depositing a first Ta_2O_5 layer on a first electrode,

curing the first Ta_2O_5 layer, depositing a second Ta_2O_5 layer on the cured first Ta_2O_5 layer using only $Ta(OC_2H_5)_5$ without a reactant gas. Depositing the second Ta_2O_5 layer includes the steps of introducing the semiconductor substrate into a deposition chamber, supplying a source gas to the deposition chamber and heating the semiconductor substrate such that a stable Ta_2O_5 layer is deposited (see the specification, for example at page 8, lines 7-29). After depositing the second Ta_2O_5 layer a second electrode is formed on the second Ta_2O_5 layer without curing the second Ta_2O_5 layer.

In Chung, *et al.*, deposition of a tantalum oxide layer 120 includes the introduction of a semiconductor substrate into a deposition chamber. Tantalum precursors are introduced into the deposition chamber, and the tantalum precursors are chemically or physically adsorbed on the surface of an Ru electrode 110. After the adsorption is complete and a predetermined time has elapsed, purge gas is introduced into the deposition chamber, and after a predetermined time has elapsed, the inflow of the purge gas is stopped and ozone gas is introduced into the deposition chamber, whereby the ozone gas reacts with the adsorbed tantalum precursors to form the tantalum oxide layer (see Chung, *et al.*, column 5, lines 14-38). The stated Chung, *et al.* deposition is similar to the conventional cyclical deposition procedure discussed in the specification of the present invention at page 7, line 26 through page 8, lines 1-6.

Chung, *et al.* fails to teach or suggest that depositing the second dielectric layer includes "introducing the semiconductor substrate into a deposition chamber, supplying a source gas to the deposition chamber and heating the semiconductor substrate such that a stable dielectric layer is deposited", as claimed in claim 1. Instead, in Chung, *et al.*, the ozone gas reacts with the adsorbed tantalum precursors to form the tantalum oxide layer, and therefore Chung, *et al.* fails to teach or suggest the step of heating the semiconductor substrate such that a stable dielectric layer is deposited. Chung, *et al.* also fails to teach or suggest that depositing the second Ta_2O_5 layer includes the steps of "introducing the semiconductor substrate into a deposition chamber, supplying a source gas to the deposition chamber and heating the semiconductor substrate such that a stable Ta_2O_5 layer is deposited", as claimed in claim 16. Instead, in Chung, *et al.*, the

ozone gas reacts with the adsorbed tantalum precursors to form the tantalum oxide layer, and therefore Chung, *et al.* fails to teach or suggest the step of heating the semiconductor substrate such that a stable Ta_2O_5 layer is deposited.

Basceri, *et al.* is cited in the Office Action as teaching curing a dielectric layer prior to forming a second electrode, or as an alternate embodiment, depositing the second electrode on an uncured dielectric by depositing the electrode with an oxygen atmosphere or diffusing oxygen through the second electrode after deposition. Basceri, *et al.* fails to teach or suggest that depositing the second dielectric layer includes "introducing the semiconductor substrate into a deposition chamber, supplying a source gas to the deposition chamber and heating the semiconductor substrate such that a stable dielectric layer is deposited", as claimed in claim 1. Basceri, *et al.* further fails to teach or suggest that depositing the second Ta_2O_5 layer includes the steps of "introducing the semiconductor substrate into a deposition chamber, supplying a source gas to the deposition chamber and heating the semiconductor substrate such that a stable Ta_2O_5 layer is deposited", as claimed in claim 16.

Neither Chung, *et al.* nor Basceri, *et al.* teaches or suggests that depositing the second dielectric layer includes "introducing the semiconductor substrate into a deposition chamber, supplying a source gas to the deposition chamber and heating the semiconductor substrate such that a stable dielectric layer is deposited", as claimed in claim 1. Further, neither Chung, *et al.* nor Basceri, *et al.* teaches or suggests that depositing the second Ta_2O_5 layer includes the steps of "introducing the semiconductor substrate into a deposition chamber, supplying a source gas to the deposition chamber and heating the semiconductor substrate such that a stable Ta_2O_5 layer is deposited", as claimed in claim 16. Accordingly, it is submitted that the combination of Chung, *et al.* and Basceri, *et al.* fails to teach or suggest the invention as claimed in claims 1 and 16. Reconsideration of the rejection of, and allowance of, claims 1 and 16 are respectfully requested. With regard to the dependent claims 2-15, 17 and 18, it follows that these claims should inherit the allowability of the independent claims from which they depend.

With regard to the rejection of claim 13, Narwankar, *et al.* is cited in the Office Action as disclosing forming an oxygen atmosphere by supplying gas in a thermal heated operation or in an RF plasma. Like Chung, *et al.* and Basceri, *et al.*, Narwankar, *et al.* fails to teach or suggest that depositing the second dielectric layer includes "introducing the semiconductor substrate into a deposition chamber, supplying a source gas to the deposition chamber and heating the semiconductor substrate such that a stable dielectric layer is deposited", as claimed in claim 1. Accordingly, it is submitted that the combination of Chung, *et al.*, Basceri, *et al.* and Narwankar, *et al.* fails to teach or suggest the invention as claimed in claim 1. Reconsideration of the rejection of, and allowance of, claim 13 which is dependent from claim 1 are respectfully requested.

Closing Remarks

It is submitted that all claims are in condition for allowance, and such allowance is respectfully requested. If prosecution of the application can be expedited by a telephone conference, the Examiner is invited to call the undersigned at the number given below.

Respectfully submitted,

Date: April 20, 2006

Mills & Onello, LLP
Eleven Beacon Street, Suite 605
Boston, MA 02108
Telephone: (617) 994-4900, Ext. 4902
Facsimile: (617) 742-7774
J:\SAM\0477\RCE\amendmentafterfinal2.wpd

Anthony P. Onello, Jr.
Registration Number 38,572
Attorney for Applicant